

The Spaces in Between*

Alan Fricker
Sustainable Futures Trust
New Zealand

A Scientist's Difficulty with Microvita

P. R. Sakar describes microvita as the smallest and subtlest living entities, mediators of cosmic intelligence and of all elemental and living matter. The concept is too large a leap for this conventional scientist, steeped if not grounded in Western science. There is hypothesis and theory, but the vital link, demonstrable and reproducible evidence, is missing. Yet evidence there could be for we are dealing supposedly with matter, just as quarks, for example, are supposedly matter too.

This is not to deny microvita, merely to say it's existence is a matter of faith rather than reason at the level of consciousness of Western science and scientists – level 12 in Ken Wilber's four quadrant model (Wilber 1997). But then, quarks are a matter of faith too, at least for this scientist. Faith in the sense that I cannot experience that evidence for myself, even if I wanted to. It is difficult not to acquiesce to the prevailing scientific perception of 'what is'. Yet we must be mindful that great scientific discoveries often begin in heresy, either within the wider worldview (Galileo) or within the established scientific worldview (Einstein). Perhaps microvita is a heresy of today, but a truth of tomorrow.

A Spirit's Difficulty with Science

Although prepared (or conditioned) to abide by the prevailing scientific worldview, this scientist is conscious that he is a spiritual being having a human experience – an experience that is much wider than science can explain or show. Indeed the values of these other experiences lies not in their substance. Yet, in the absence of substance in these other experiences, I can be seduced by the Faustian bargain. So it is not substance I should seek in these other experiences. Thus microvita, to me, is a revised, but less tangible, Western science.

Molecular biology, human genetics in particular, has brought science to a pinnacle in that life can now be completely reconfigured in ways Nature can not or has elected not to. The Human Genome Project will be able to tell us in minute detail what we are and how we function. It and science though cannot tell us who we are and why we are. Furthermore in reconfiguring life, science, that is we ourselves, must presumably add those other dimensions of existence, of experience, that we as humans, and perhaps some sentient beings at least,

*Alan Fricker wrote this paper before he passed away nearly 10 years ago. The editors believe it fits perfectly in the debate on microvita, subtle organicism and science that was initiated by Michael Towsey in the September 2011 issue.

enjoy. In other words, add those components (perhaps without substance) that enable the genes to become an organism, functioning within its environment, which it both influences and is influenced by. A tall order, which suggests a petard rather than pinnacle for molecular biology.

Genetic Modification

The enormity of the issues around genetic engineering, more correctly modification in that engineering is more capable of precision than is genetic intervention, are, in this scientist's opinion, much greater than the considerable concern and alarm already raised globally. New Zealand is perhaps the only nation having a public inquiry, by royal commission, into the issues. Extensive though this inquiry is - at the time of writing it is only halfway through the evidence - the submissions reflect the particular vested interests of the submitters. Understandable though this may be, it does not help the Commission to make its own detached assessment of the science, technology, and implications. Very few scientists are offering their own detached, objective and subjective views, for they, like most of us, are wearing someone else's or organisation's hat. We are no longer individuals - perhaps we never were.

Whilst wishing to exert some control over Nature to attain a modicum of comfort, and recognising we can disrupt the delicate order to our peril, we seem convinced we can do a better job than Nature does. We now want to engineer her, to control her. Our justification is that we have been doing so for centuries, for millennia. Undoubtedly true in some respects, but we have also been copying or mimicking her. Yet biomimetic futures are possible and perhaps preferable options to genetically engineered futures (Fricker 2000).

Genetic modification is not a simple issue. It is not a yes/no decision, simply because we have been intervening genetically for centuries to our advantage and not necessarily to Nature's disadvantage. There have been considerable benefits with few downsides. Genetic modification is yet another paradox of life - how much and how fast? Are there genetic boundaries? I think there are and they are beginning to emerge in the peripheral literature, from the observers and commentators who have an understanding of molecular biology and a broad immersion in the pursuit of meaning in life. I believe there are several boundaries, some perhaps absolute and others temporal and contextual.

Vertical Gene Transfer

Vertical gene transfer is within a species, the sort of transfer that can, in theory if not in practice, occur through sexual and asexual reproduction and through normal cell multiplication. Conventional plant and animal breeding is vertical transfer. We have helped Nature do her work, through selection, vegetative reproduction, and protection. The downsides of conventional breeding are largely indirect, in that we have neglected to preserve the landrace lines and wild ancestors from which the cultivated and domesticated descendents derive.

The relatively recent and aggressive breeding methods using radiation and chemical mutagenesis are still largely vertical. Although induced mutations exceed natural mutations, few are usable because of the deleterious effects of chromosomal aberrations. Latent concerns about the practices and implications of mutagenesis

have been strengthened by concerns about genetic engineering. These concerns pertain to ‘escapes’, weediness, contamination, and health.

Gene therapy (somatic and stem cell) is predominantly, if not totally, vertical gene intervention if not transfer, ie. within the human species, and pertains essentially to living people and fetuses. Nevertheless the considerable concerns are social, cultural, ethical and spiritual, rather than clinical. Germ line therapy is vertical too but is effectively about future people. In essence it denies a future person the right to exist as they would have been. There are alternatives to germ line therapy - avoidance of conception or adoption. They cannot be construed as denying a future person the right to exist at all.

Horizontal Gene Transfer

Horizontal gene transfer is between species, genera, families, and even between kingdoms. The distinctions are by no means clear, even between plant and animal kingdoms. Horizontal transfer may occur naturally and infrequently between simple organisms, eg. viruses, bacteria, fungi within the soil, and usually without long term detriment through the ‘corrective’ processes of biological evolution. Natural horizontal transfer between complex species is unknown.

The consequences of the deliberate, and frequent, horizontal transfer of gene sequences from one species to another can only be known after the event. We cannot predict the outcomes of Nature’s ‘corrective’ processes of biological evolution. The majority of transfers will perhaps be harmless, but there is sufficient evidence to advocate much caution.

Nearly all applications of horizontal transfer pertain to plant/plant, plant/animal, and animal/animal transfers. Transfers to humans, be they gene sequences or xenoplants, are of another order of concern about which even less is known. The unimpressive record of xenoplants has probably hardened the public attitude not only to that practice but also to the cloning of human spare parts, even though scientists seem to prefer cloning (vertical) to xenoplants. Most genetically modified medicines (whether from plants or other animals) do not as a rule implicate the genetic make-up of the recipient, even though there may be a reaction.

What is being Transferred?

As a generalisation, the simpler the organisms, the less complicated the DNA and the less the risk of unintended transfer consequences, particularly if within a species. Nearly all the gene sequences of the DNA of simple organisms (viruses, bacteria) used in genetic modification have known functionality. The human genome however has 95% so-called ‘junk’ DNA, ie. it is non-functional. It is known as intron, or non-coding DNA. At least, it was thought to be non-functional. That now seems to be far from the case. There is evidence that non-coding DNA:

- is absolutely essential for chromosomal structure and function,
- can control the recognition and transcription of exons (protein coding DNA), and
- regulates gene expression during development.

These are functions, functions of the exterior individual organism – the physical or material that has location. Perhaps there are many more. An organism, particularly a sentient organism like a human, is more than its genes. It both influences and

is influenced by its environment. To use Wilber's quadrants, the human, at least, also exists within its own interior self and the collective interior of its culture – the immaterial without location. Its consciousness initially is determined by the cultural consciousness in which it was brought into existence. In developing its own consciousness it in turn influences the cultural consciousness. There is thus a seamless web of individual and collective interior dimensions. These define the organism as much as does its genetic make-up.

Just as there is debate as to whether a gene sequence (a suite of exons) is substance (material) or information (non-material), so too might be intron. Could it be the microvita, of which Sarkar spoke, be within the intron too – the smallest and subtlest living entities, mediators of cosmic intelligence and of all elemental and living matter?

References

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